COMPLETE LISTING OF THE CLAIMS

The following lists all of the claims that are or were in the above-identified patent application. The status identifiers respectively provided in parentheses following the claim numbers indicate the current statuses of the claims. In particular, claims having the status of "currently amended" are being amended in this reply.

1. (Currently Amended) An interferometer comprising:

a ~~laser that produces~~ source of a heterodyne beam that includes a first frequency component having a first frequency and a first linear polarization and a second frequency component having a second frequency and a second linear polarization, wherein the second linear polarization is orthogonal to the first linear polarization;

a beam splitter positioned to ~~split~~ separate the first and second frequency components of the heterodyne beam ~~into~~ and thereby produce a first beam having the first frequency and a second beam having the second frequency ~~different frequencies~~;

a first AOM in a path of the first beam, the first AOM operating to increase a difference between the frequencies of the first and second beams; and

interferometer optics that generate measurement and reference beams from the first and second beams.

2. (Original) The interferometer of claim 1, further comprising a second AOM in a path of the second beam, the second AOM changing a frequency of the second beam.

3. (Currently Amended) The interferometer of ~~claim 1~~ claim 4, wherein the laser employs Zeeman splitting to provide ~~in~~ the heterodyne beam with a first component having ~~a~~ the first frequency and a second component having ~~a~~ the second frequency.

4. (Currently Amended) The interferometer of ~~claim 3~~ claim 1, ~~further comprising~~ wherein the source of the heterodyne beam comprises:

a laser; and

an optical element in a path of the heterodyne beam between the laser and the beam splitter, wherein in the heterodyne beam exiting the optical element, the first frequency component has ~~a first~~ the first linear polarization and the second frequency component has ~~a second~~ the second linear polarization ~~that is orthogonal to the first linear polarization~~.

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5. (Currently Amended) The interferometer of claim 4, wherein the beam splitter ~~comprises~~ is a polarizing beam splitter that uses the first and second linear polarizations of the first and second frequency components to separate the first and second frequency components and split the heterodyne beam into the first and second beams.

6. (Original) The interferometer of claim 1, further comprising a beam-combining unit positioned to receive the first and second beams and provide a recombined heterodyne beam to the interferometer optics.

7. (Currently Amended) ~~The~~ An interferometer ~~of claim 6, wherein~~ comprising:

a source of a heterodyne beam;

a beam splitter positioned to split the heterodyne beam into a first beam and a second beam having different frequencies;

a first AOM in a path of the first beam, the first AOM operating to increase a difference between frequencies of the first and second beams;

interferometer optics that generate measurement and reference beams from the first and second beams; and

a beam-combining unit positioned to receive the first and second beams and provide a recombined heterodyne beam to the interferometer optics, wherein the beam combining unit comprises:

a beam combiner;

a first optic cable assembly that carries the first beam ~~to the beam-combining unit~~;

a second optic cable assembly that carries the second beam to the beam combiner; and

a first manipulator on which the first fiber optic cable assembly is mounted, the first manipulator being adjustable to control a direction of the first beam upon exit from the first fiber optic cable assembly, wherein adjustment of the first manipulator controls an incident angle of the first beam on the beam combiner.

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8. (Currently Amended) The interferometer of claim 7, wherein the beam-combining unit further comprises ~~: a second optic cable assembly that carries the second beam to the beam-combining unit; and~~ a second manipulator on which the second fiber optic cable assembly is mounted, the second manipulator being adjustable to control a direction of the second beam upon exit from the second fiber optic cable assembly, wherein adjustment of the second manipulator controls an incident angle of the second

beam on the beam combiner.

9. (Original) The interferometer of claim 7, wherein the first manipulator is further adjustable to translate the first beam upon exit to control an incident location of the first beam on the beam combiner.

Claims 10 to 29 are canceled.

30. (New) The interferometer of claim 7, further comprising a second AOM in a path of the second beam, the second AOM changing a frequency of the second beam.

31. (New) The interferometer of claim 7, wherein the source of the heterodyne beam comprises:

a laser; and

an optical element in a path of the heterodyne beam between the laser and the beam splitter, wherein in the heterodyne beam exiting the optical element, a first frequency component has a first frequency and a first linear polarization and a second frequency component has a second frequency and a second linear polarization that is orthogonal to the first linear polarization.

32. (New) The interferometer of claim 31, wherein the laser employs Zeeman splitting to provide the heterodyne beam with frequency components respectively having the first frequency and the second frequency.

33. (New) The interferometer of claim 31, wherein the beam splitter is a polarizing beam splitter that uses the first and second linear polarizations of the first and second components to separate the first and second components and split the heterodyne beam into the first and second beams.

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